

Worksheet #20: Sequential->Parallel Spanning Tree Algorithm

Name: _____

Netid: _____

1. Insert finish, async, and isolated constructs (pseudocode is fine) to convert the sequential spanning tree algorithm from the other side into a parallel algorithm
2. Is it better to use a global isolated or an object-based isolated construct for the parallelization in question 1? If object-based is better, which object(s) should be included in the isolated list?



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```
1. class V {
2.     V [] neighbors; // adjacency list for input graph
3.     V parent; // output value of parent in spanning tree
4.
5.     boolean makeParent(V n) {
6.         if (parent == null) { parent = n; return true; }
7.         else return false; // return true if n became parent
8.     } // makeParent
9.
10.    void compute() {
11.        for (int i=0; i<neighbors.length; i++) {
12.            final V child = neighbors[i];
13.            if (child.makeParent(this))
14.                child.compute(); // recursive call
15.        }
16.    } // compute
17.} // class V
18. . . . // main program
19.root.parent = root; // Use self-cycle to identify root
20.root.compute();
21. . . .
```

